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On the true identity of *Geophilus tropicus* Brölemann, 1898, a geophilid species from Venezuela
(Chilopoda Geophilomorpha Geophilidae)

Abstract - *Ribautia (Ribautia) tropica* (Brölemann, 1898) **comb. nov.**, transferred here from *Geophilus*, is redescribed after type series. A lectotype is also selected.

Riassunto - *Sulla vera identità di* Geophilus tropicus *Brölemann, 1898, un geofilomorfo del Venezuela (Chilopoda Geophilomorpha Geophilidae).*
Viene qui ridescritta, in seguito allo studio della serie tipica, *Ribautia (Ribautia) tropica* (Brölemann, 1898) **comb. nov.**, originariamente descritta nel genere *Geophilus* e per essa viene designato un lectotipo.

Key words: *Ribautia tropica*, new combination, Venezuela.

In 1898 H. W. Brölemann described a new geophilid species from Venezuela under the name *Geophilus tropicus*. To the best of our knowledge, no author has ever commented about the generic assignment of this species. It was also retained within *Geophilus* by C. Attems in his 1929 monograph of the order Geophilomorpha.

But the genus *Geophilus* is nearly exclusive Holarctic, most of the species being Palaearctic, so we suspected that this generic assignment could be wrong. In addition, the very poor original description included the statement that the specimens studied where probably juveniles. These facts encouraged us to revise the type material. A careful revision of all generic characters reveals that the specimens must be referred to the genus *Ribautia* Brölemann, 1909.

NOTE TO TEXT AND FIGURES. We use the following abbreviations: a.a., antennal article; d., dorsal; l., left; r., right; v., ventral.

Family Geophilidae
Genus *Ribautia* Brölemann, 1909

DIAGNOSIS. Coxosternites of the second maxillae united by a small bridge only, anterointernal corners of coxosternum with a more or less developed process. Forcipulae: pleu-

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rocoxosternal sutures extend obliquely to the outer margin; chitinlines present. Coxopleura of the last leg-bearing segment with numerous coxal organs, opening either individually or in 1-3 clusters on each coxopleuron. Pretarsus of last legs claw-like or tubercle-like.

Two subgenera can be recognised, *Ribautia* Brölemann, 1909, and *Schizoribautia* Brölemann, 1912, the first including the species with coxal organs opening independently on the coxopleura, the second those with coxal organs grouped in 1 to 3 clusters.

Ribautia (*Ribautia*) *tropica* (Brölemann, 1898) **nov. comb.** (figs. 1-29)

Geophilus tropicus Brölemann, 1898 - Ann. Soc. Ent. France 67: 254.
Geophilus tropicus; Attems, 1903 - Zool. Jahrb., Syst., 18: 237.
Geophilus tropicus; Ribaut, 1912 - Mém. Soc. neuchâtel. Sci. nat., 5: 83.
Geophilus tropicus; Attems, 1929 - Das Tierreich 52: 177.

DIAGNOSIS. A *Ribautia (Ribautia)* species with pretarsus of last pair of legs unguiform. Characters in the table differentiate it from all the other Neotropical species of the subgenus.

TYPE MATERIAL EXAMINED. Lectotype ♀, 47 pairs of legs, body length 14 mm, from Venezuela: Caracas, 1888, E. Simon legit, (in alcohol) (MNHN Coll. Myriapodes 107); another ♀ from the original type series (specimen B), also with 47 pairs of legs, body length 13 mm, with same collection data.

REMARKS. Because Brölemann did not select a type, we designate here as lectotype the specimen more closely agreeing with the original description. The other specimen is, however, better preserved than the lectotype, therefore we have used it for the following redescription.

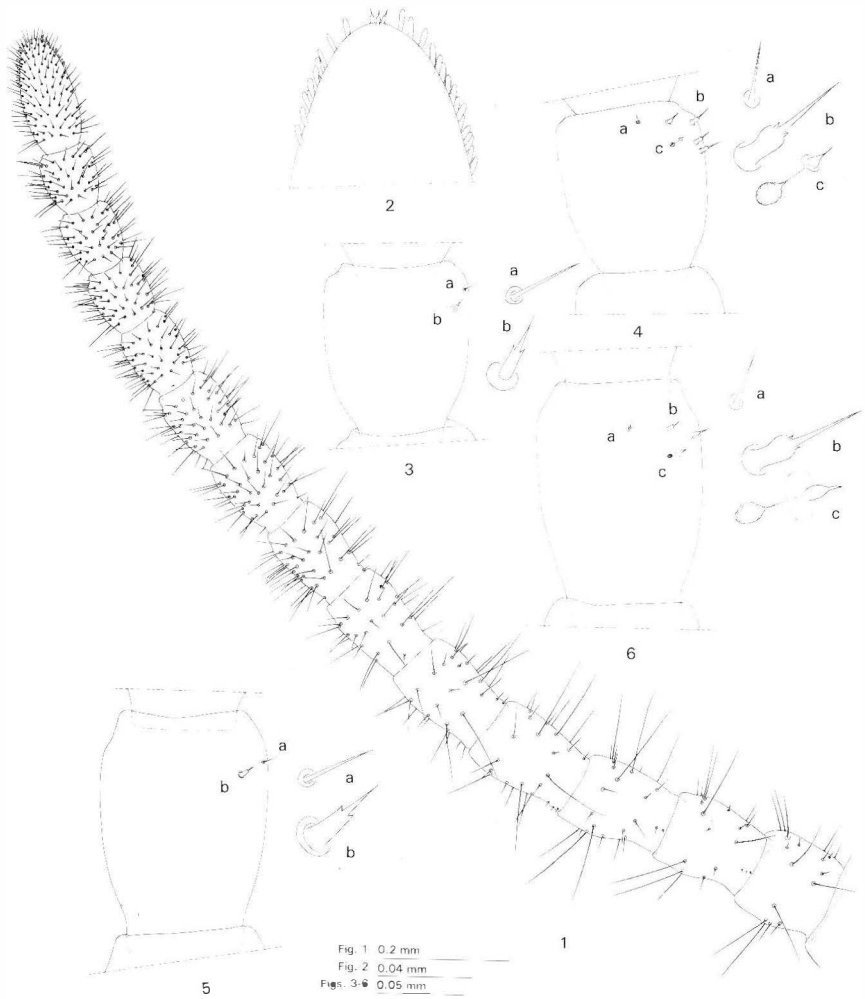
REDESCRIPTION. ♀ (specimen B). 47 pairs of legs, body length 13 mm, maximum body width 0.5 mm. Colour (of preserved specimen in alcohol) yellowish, forcipular segment darker (pale ochreous).

Antennae ca. 2.7 times longer than the cephalic plate, distally attenuate, all articles (except the first) longer than wide. Setae on a.a. I-V of different lengths and few in number, those of remaining articles progressively shorter and more numerous towards the tip of the appendage (fig. 1). Terminal a.a. with ca. 16 claviform sensory setae on the external border and ca. 10 on the internal border (Fig. 2). Distal end of this a.a. with ca. 3 very small specialised setae which at the light microscope look as in fig. 2. Dorsal and v. surface of a.a. II, V, IX and XIII with very small specialised setae. On the v. side these setae are restricted to an internal latero-apical area and occur in two different types: *a* and *b*. Type *a* setae are very thin and not divided apically, type *b* setae are thicker than type *a* and have two tiny apical branches (*a*, *b*; figs. 3, 5). Antennal article II with 1 type *b* seta; a.a. V, IX (fig. 5) and XIII (fig. 3) with 1 type *a* and 1 type *b* setae. Specialised setae on d. side restricted to an external latero-apical area, of three different types: *a* and *b* similar to *a* and *b* of v. side, type *c* setae similar to type *b* but much smaller and having basally, still within the a.a., a small dark 'root' something between half sphaere and half ovoid in shape (*a*, *b*, *c*; figs. 4, 6). Antennal articles II and V with 1 type *a* and 1 type *b* setae; a.a. IX (fig. 6) with 1 type *a*, 2 type *b* and 1 type *c* setae and a.a. XIII (fig. 4) with 1 type *a*, 3-4 type *b* and 1 type *c* setae.

Cephalic plate nearly rectangular but sides curved, distinctly longer than wide (ratio 1.5: 1), shape and chaetotaxy as in fig. 7.

Clypeus with 2 setae located on the clypeal area; middle part with 2+2 big setae and 1+1 very small ones (fig. 8). Surface of clypeal area not reticulated, hyaline and very finely grained (fig. 9).

Labrum: mid-piece well developed and sclerotised, with ca. 6 short and round poin-

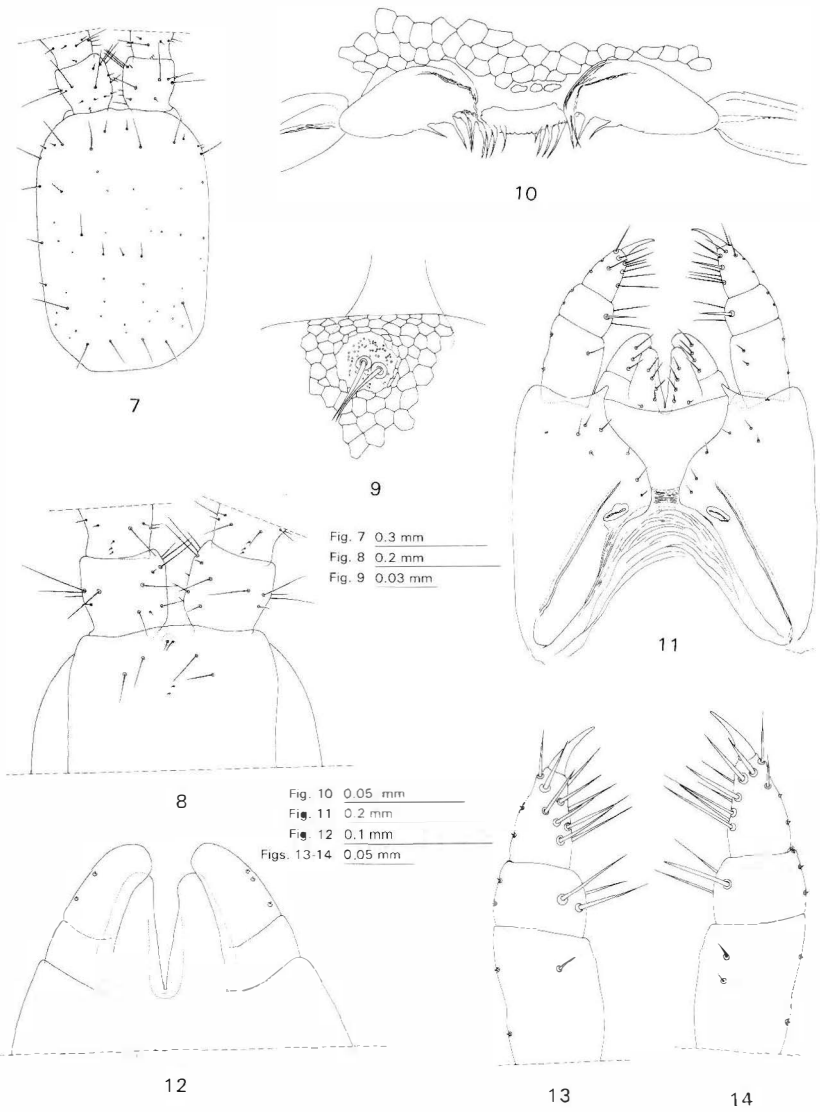


Figs. 1-6 - *Ribautia (Ribautia) tropica* (Brölemann, 1898). ♀ specimen B (Venezuela: Caracas). 1: r. antenna, v.; 2: distal portion of l.a.a. XIV, v.; 3: r.a.a. XIII, v.; 4: r.a.a. XIII, d.; 5: r.a.a. IX, v.; 6: r.a.a. IX, d.; a, b, c: *a*, *b*, *c* type setae.

ted teeth on the middle and 3+4 long hyaline filaments on both sides. Side-pieces with 5+4 long hyaline filaments (fig. 10).

Mandible: pectinate lamella with ca. 16 hyaline teeth.

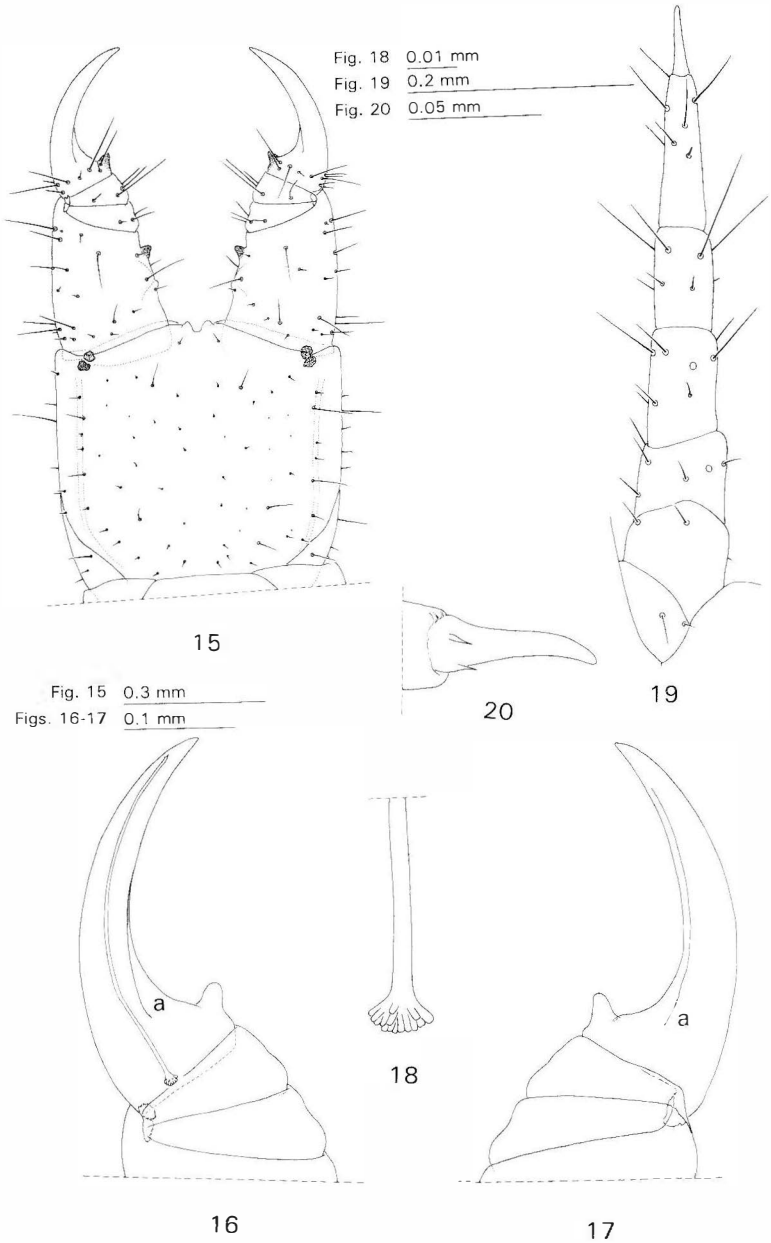
First maxillae without palps on coxosternum and telopodites (fig. 12). Coxosternum without setae; median projections of coxosternum subtriangular, well developed and provided with 5+5 setae of different lengths. Article II of telopodite with 3+4 v. setae and 2+3 d. sensilla (figs. 11-12).



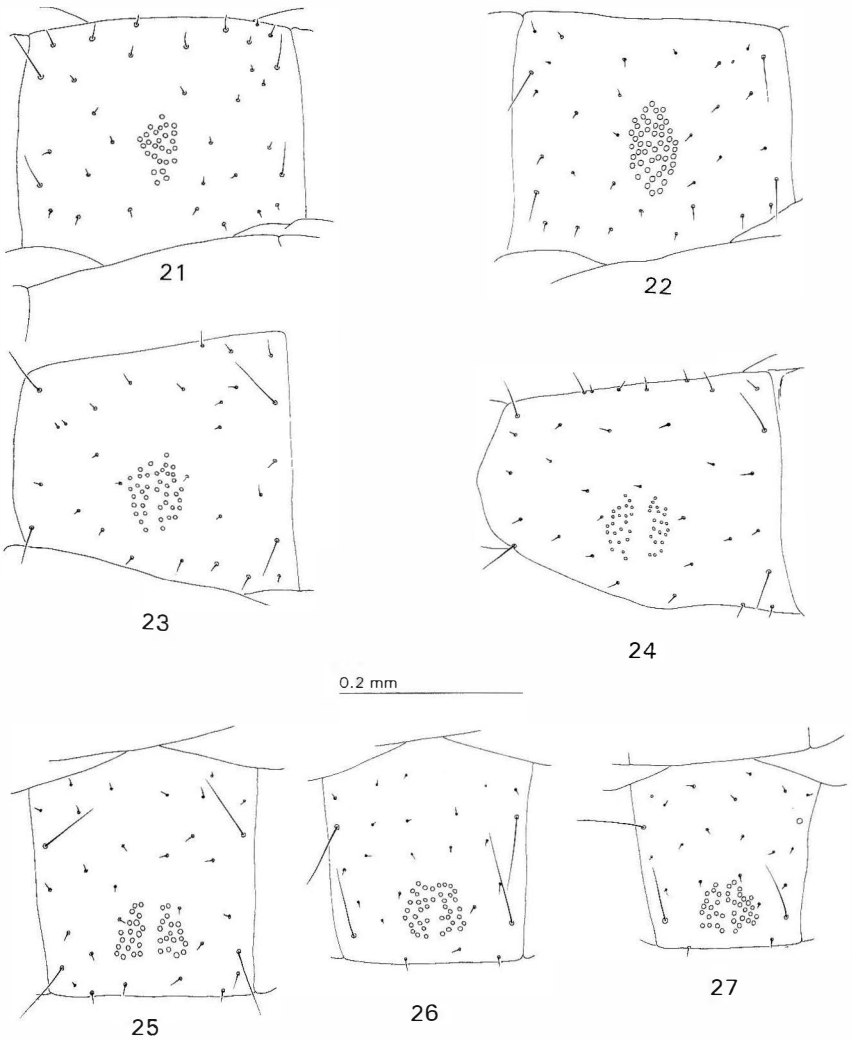
Figs. 7-14 - *Ribautia (Ribautia) tropica* (Brölemann, 1898). ♀ specimen B (Venezuela: Caracas). 7: cephalic shield; 8: clypeus and bases of antennae; 9: clypeal area; 10: labrum; 11: first and second maxillae, v.; 12: first maxillae, d.; 13: telopodite of l. second maxilla, d.; 14: the same, v.

Second maxillae: the coxites bearing 7+6 setae are joined medially only by a non-areolate membranous isthmus (fig. 11). Chaetotaxy of telopodites represented by setae of different thickness as shown in figs. 13-14.

Forcipulae: when closed telopodites reach the level of the anterior margin of the head or slightly project beyond. Basal plate with an irregular transverse row of 4 large setae near

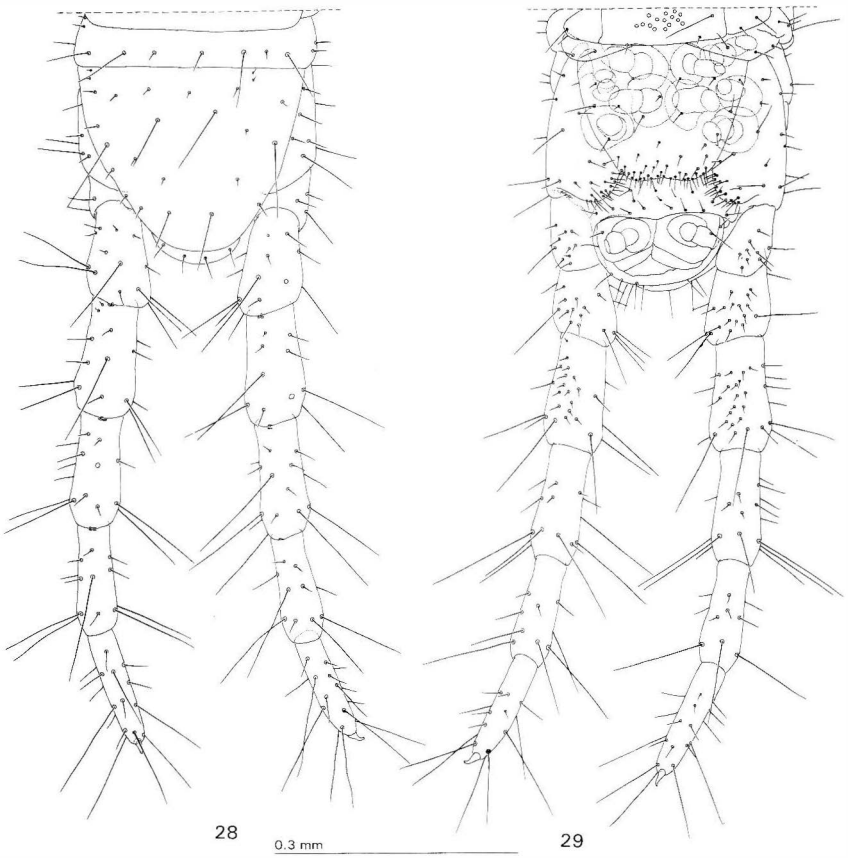


Figs. 15-20 - *Ribautia (Ribautia) tropica* (Brölemann, 1898). ♀ specimen B (Venezuela: Caracas). 15: forcipular segment with poison claws, v.; 16: distal portion of r. forcipular telopodite, v.; 17: the same, d.; 18: detail of calyx of r. poison gland, v.; 19: l. leg XV, v.; 20: claw of l. leg XLVI, v.



Figs. 21-27 - *Ribautia (Ribautia) tropica* (Brölemann, 1898). ♀ specimen B (Venezuela: Caracas): sterna II, VI, XIV, XV, XLIV, XLV, XLVI.

the posterior margin and few additional smaller setae dispersed on the remaining surface. Telopodites: trochanteropraefemur apically with a conspicuous subtriangular and deeply pigmented tooth on the medial edge; proximally there is a round pointed projection without pigmentation. Femur and tibia without teeth. Tarsungulum basally with a well developed and deeply pigmented tooth, ungular blade with d. and v. edges not serrulate and extended proximally as indicated in "*a*", figs. 16-17. Calyx of poison gland as in figs. 16, 18; chae-



Figs. 28-29 - *Ribautia (Ribautia) tropica* (Brölemann, 1898). ♀ specimen B (Venezuela: Caracas). 28: last leg-bearing segment and terminal segments, d.; 29: the same, v.

totaxy of coxosternum and telopodites as in fig. 15.

Legs (last pair excepted) with chaetotaxy (fig. 19) uniform throughout the body length. Claws ventrobasally with one anterior and one posterior spine (fig. 20).

Sterna: pore fields present from the second to the penultimate sternum. Fields undivided on sterna II to XIV and XLV to XLVI, but divided in two subsymmetrical areas on sterna XV to XLIV. Form of fields changing along the trunk as in figs. 21-27. Number of pores on selected sterna: on sternum II, 27 pores; on VI, 48; on XIV, 40; on XV, 23+21; on XLIV, 19+18; on XLV, 40; on XLVI, 38.

Last leg-bearing segment without pleurites at the sides of praetergum. Praesternum not divided along the sagittal plane; form and chaetotaxy of sternum and tergum as in figs. 28-29. Coxopleura protruding at their distal v. ends, setae small and numerous on distal internal edge, the remaining surface with few larger setae. Coxopleura with 5+6 single coxal organs opening independently on the membrane between coxopleuron and sternum

and covered by the latter (fig. 29). Last legs with seven podomeres, shape and chaetotaxy as in figs. 28-29. Praetarsus unguiform, relatively smaller than those of the preceding legs.

Terminal segments: intermediate tergum with posterior margin convex, intermediate sternum seemingly covered by the sternum of the last leg-bearing segment, first genital sternum as in fig. 29. Anal organs present.

♂: unknown.

REMARKS. Brölemann (1898: 254) said of the specimens he studied: "*Très petit (peut être s'agit-il de jeunes)*". This was repeated by Attems (1929: 177) who said: "*juv.?*". *R. tropica* is, in fact, a small species, because the type specimens are two adult females with spermatecae full of spermatozoa (at the level of segments 41-43 in both specimens) and also mature ova.

LIST OF THE NEOTROPICAL SPECIES OF *RIBAUTIA* BRÖLEMANN, 1909

Genus *Ribautia* Brölemann, 1909
Subgenus *Ribautia* Brölemann, 1909

- *R. (R.) bouvieri* Brölemann, 1909 (Brazil) (Brölemann, 1909b: 421)
- *R. (R.) ducalis* Pereira, Minelli & Barbieri, 1995 (Brazil) (Pereira, Minelli & Barbieri, 1995: 329)
- *R. (R.) fuhrmanni* Ribaut, 1912 (Colombia) (Ribaut, 1912: 79)
- *R. (R.) pacifica* Kraus, 1954 (Peru) (Kraus, 1954: 314)
- *R. (R.) proxima* Pereira, Minelli & Barbieri, 1995 (Brazil) (Pereira, Minelli & Barbieri, 1995: 331)
- *R. (R.) russi* Chamberlin, 1957 (Ecuador) (Chamberlin, 1957: 26)
- *R. (R.) silvestri* Kraus, 1954 (Peru) (Kraus, 1954: 313)
- *R. (R.) tropica* (Brölemann, 1898) (Venezuela) (Brölemann, 1898: 254, *Geophilus*)
- *R. (R.) vivasberthieri* Chamberlin, 1941 (Venezuela) (Chamberlin, 1941: 141)

subgenus *Schizoribautia* Brölemann, 1912

- *R. (S.) andecola* Kraus, 1954 (Peru) (Kraus, 1954: 316)
- *R. (S.) carpisha* (Chamberlin, 1957) (Peru) (Chamberlin, 1957: 28, *Schizoribautia*)
- *R. (S.) centralis* (Silvestri, 1907) (Brazil, Colombia) (Silvestri, 1907: 256, *Eurytion*)
- *R. (S.) colcabensis* Kraus, 1957 (Peru) (Kraus, 1957: 373)
- *R. (S.) difficilis* Pereira, Minelli & Barbieri, 1995 (Brazil) (Pereira, Minelli & Barbieri, 1995: 333)
- *R. (S.) junina* (Chamberlin, 1957) (Peru) (Chamberlin, 1957: 29, *Schizoribautia*)
- *R. (S.) limaensis* Kraus, 1957 (Peru) (Kraus, 1957: 376)
- *R. (S.) montana* Kraus, 1954 (Peru) (Kraus, 1954: 315)
- *R. (S.) peruana* Verhoeff, 1941 (Peru) (Verhoeff, 1941: 71)
- *R. (S.) phana* (Chamberlin, 1955-56)(Peru) (Chamberlin, 1955-56: 16, *Polygonarea (Nearia)*)
- *R. (S.) seydi* Ribaut, 1923 (Peru) (Ribaut, 1923: 71)
- *R. (S.) titicacae* (Turk, 1955) (Peru) (Turk, 1955: 487, *Schizoribautia*)

	ducalis	*tropica*	*bouvieri*	*proxima*	*fuhrmanni*	*pacifica*	*rossi*	*vivasberthieri*
body length (mm)	14	14	33	43	53	41	22	21
pairs of legs: male	41	?	73	73, 75, 77	53	?	(47 - sex unknown)	?
pairs of legs: female	41, 43	47	?	75, 77, 79	53, 69	65		49
ventral pore fields series along the whole trunk length	yes	yes	yes	yes	yes	yes	no: on anterior sterna only	?
pore field on sternum I	no	no	yes	no	no	no	no	yes
pore fields at midbody length divided in two areas	yes	yes	no (all pores undivided)	no (all pores undivided)	yes	no (all pores undivided)	no (all pores undivided)	?
number of coxal organs	3+3	ca. 5+6	ca. 8+8	ca. 10+10	ca. 5 to 7 + 5 to 7	?	3+3	several
last leg praetarsus	tubercle-like	unguiform	tubercle-like	tubercle-like	unguiform	unguiform	unguiform ?	?

TABLE 1 - A matrix of diagnostic characters for the Neotropical species of *Ribautia (Ribautia)* (Data on *R. (R.) fuhrmani*, *R. (R.) pacifica*, *R. (R.) rossi* and *R. (R.) vivasberthieri* are taken from the literature).

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